

T.0333C

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
21 April 2005 (21.04.2005)

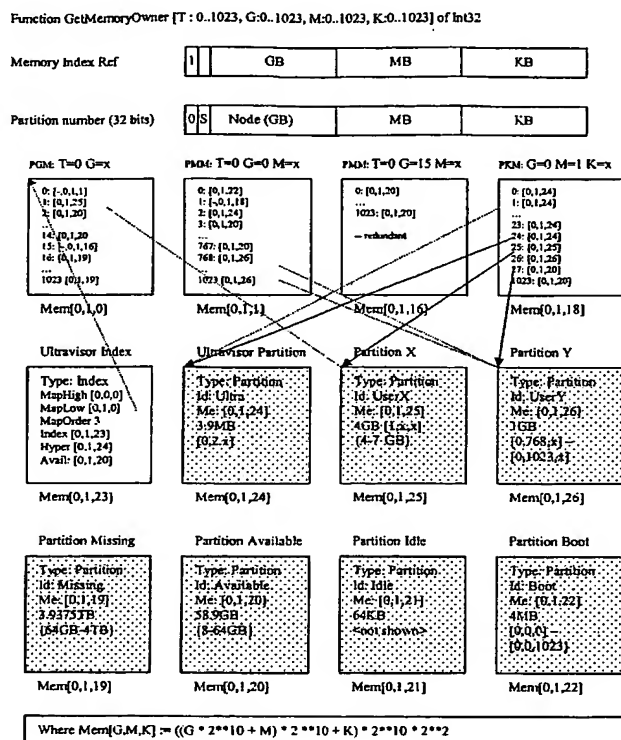
PCT

(10) International Publication Number
WO 2005/036806 A2

- (51) International Patent Classification⁷: **H04L** [US/US]; 7124 Old Easton Road, Pipersville, PA 18947 (US).
- (21) International Application Number: PCT/US2004/033527
- (22) International Filing Date: 7 October 2004 (07.10.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 60/509,581 8 October 2003 (08.10.2003) US
- (71) Applicant (for all designated States except US): **UNISYS CORPORATION** [US/US]; Unisys Way, MS/E8-114, Blue Bell, PA 19424-0001 (US).
- (72) Inventor; and
- (75) Inventor/Applicant (for US only): **LANDIS, John, A.**
- (74) Agents: **STARR, Mark, T.** et al.; Unisys Corporation, Unisys Way, MS/E8-114, Blue Bell, PA 19424-0001 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: **SCALABLE PARTITION MEMORY MAPPING SYSTEM**



(57) Abstract: A virtualization infrastructure that allows multiple guest partitions to run within a host hardware partition. The host system is divided into distinct logical or virtual partitions and special infrastructure partitions are implemented to control resource management and to control physical I/O device drivers that are, in turn, used by operating systems in other distinct logical or virtual guest partitions. Host hardware resource management runs as a tracking application is a resource management "ultravisor" partition, while those resource management decisions are performed in a higher level command partition based on policies maintained in a separate operations partition. The conventional hypervisor is reduced to a context switching and containment element (monitor) for the respective partitions, while the system resource management functionality is implemented in the ultravisor partition. The ultravisor partition maintains the master in-memory database of the hardware resource allocations and serves a command channel to accept transactional requests for assignment of resources to partitions. It also provides individual read-only views of individual partitions to the associated partition monitors. Host hardware I/O management is implemented in special redundant I/O partitions. A scalable partition memory mapping system is implemented in the ultravisor partition so that the virtualized system is scalable to a virtually unlimited number of pages. A log (2¹⁰) based allocation allows the virtual partition

memory sizes to grow over multiple generations without increasing the overhead of managing the memory allocations. Each page of memory is assigned to one partition descriptor in the page hierarchy and is managed by the ultravisor partition.

WO 2005/036806 A2



European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

- *without international search report and to be republished upon receipt of that report*